

DISPLAY APPARATUS AND METHOD FOR CONTROLLING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority from Korean Patent Application No. 10-2015-0145273, filed on Oct. 19, 2015 in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

BACKGROUND

[0002] 1. Field

[0003] Apparatuses and methods consistent with exemplary embodiments relate to a display apparatus and a method for controlling the same.

[0004] 2. Description of the Related Art

[0005] A display apparatus displays visual and stereoscopic image information. In recent years, there have been developed flat display devices which have lower weight and volume than a cathode ray tube (CRT) and may be installed in a wide variety of spaces, thereby easily achieving large-scale image realization, flat structure, and high quality.

[0006] Representative examples of such flat display devices include a liquid crystal display (LCD), an electroluminescent display (ELD), a field emission display (FED), a plasma display panel (PDP), a thin film transistor liquid crystal display device (TFT-LCD), and a flexible display.

[0007] Generally, brightness of each pixel for use in an LCD may be determined to be a product of brightness of a backlight unit and a liquid-crystal light transmittance depending upon data. In order to increase a contrast ratio as well as to reduce power consumption, the LCD is configured to use a backlight dimming scheme that analyzes an input image and adjusts a dimming value to control brightness of a backlight unit as well as to compensate for data. Recently, the backlight unit uses a light emitting diode (LED) backlight unit configured to use an LED having higher brightness and lower power consumption than the conventional lamp, as a light source. Since the LED backlight unit may perform brightness control for each position, the LED backlight unit may be driven by a local dimming method that divides an LED into a plurality of light emitting blocks and controls brightness of each block.

[0008] Generally, a plurality of lighting devices may be installed indoors, and each lighting device may be turned on or off by a switch connected by wire or wirelessly. In this case, the lighting devices may be simultaneously turned on or off, or may be turned on or off independently of each other.

[0009] If images are displayed on the display apparatus, definition or clarity of the displayed images may be determined according to illumination intensity of a peripheral region of the display apparatus. In recent years, many developers and companies are conducting research into a method for adjusting illumination intensity of an external lighting device to increase definition of images displayed on the display apparatus, and are also conducting research into another method for allowing a designated display apparatus to control a dimming value of another external device.

SUMMARY

[0010] Exemplary embodiments may address at least the above problems and/or disadvantages and other disadvan-

tages not described above. Also, the exemplary embodiments are not required to overcome the disadvantages described above, and may not overcome any of the problems described above.

[0011] According to an aspect of one or more exemplary embodiments, there is provided, when images are displayed on a display apparatus or an external device, a method for allowing the display apparatus to generate a dimming signal to control dimming of images displayed on the display apparatus or the external device, and controlling not only brightness of the images displayed on the display apparatus or the external device but also illumination intensity of peripheral external lighting devices, and a method for controlling the same.

[0012] Additional aspects will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice.

[0013] According to an aspect of an exemplary embodiment, there is provided a display apparatus including: a display configured to display an image; a controller configured to generate a dimming signal for adjusting a brightness of an external lighting device based on a brightness of an image signal outputted from the display apparatus; and a communicator configured to transmit the dimming signal to the external lighting device to adjust the brightness of the external lighting device based on the generated dimming signal.

[0014] The controller may be configured to generate a dimming signal for adjusting the brightness of the external lighting device in proportion to the brightness of the image signal outputted from the display apparatus.

[0015] The controller may be configured to generate a dimming signal for adjusting a brightness of an image outputted from an external device based on a brightness of the image signal outputted from the external device.

[0016] The controller may be configured to generate a dimming signal for adjusting the brightness of the external lighting device based on a brightness of an image signal outputted from an external device.

[0017] The controller may be configured to generate a dimming signal for adjusting the brightness of the image outputted from the external device in proportion to the brightness of the image signal outputted from the external device.

[0018] The controller may be configured to generate a dimming signal for adjusting the brightness of the external lighting device in proportion to the brightness of the image signal outputted from the external device.

[0019] The controller may be configured to control a backlight unit (BLU) of the display apparatus based on the generated dimming signal, thereby adjusting a brightness of an image outputted from the display apparatus.

[0020] The communicator may be configured to transmit a dimming signal, generated to adjust the brightness of the image outputted from the external device, to the external device.

[0021] The communicator may be configured to transmit the dimming signal, generated to adjust the brightness of the external lighting device, to the external lighting device.

[0022] The communicator may be configured to receive an image signal including brightness information of an image outputted from an external device.

[0023] According to an aspect of another exemplary embodiment, there is provided a method for controlling a